

The role of digitalization in the development of new industrialization of Kazakhstan

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Abstract — In Kazakhstan today much attention is paid to digitalization and the introduction of modern technologies. There is no technological gap between countries at the moment. Today, Central Asian countries have almost all the conditions for the active development in implementation of modern technologies in industry. Many of the Central Asian countries are dynamically developing in the field of digitalization, have almost ideal conditions for the development of mining on their territory and gradually adapt their legislation. However, further development will depend on the political decisions of specific leaders of these countries and the willingness of local people, markets and institutions to work in new economic realities.

Keywords — digitalization, modern technologies, innovation, economy, telecommunications technology.

I. INTRODUCTION

Kazakhstan seeks to enter the top competitive and technologically advanced countries of the world. To achieve this goal, it is necessary to make active efforts to bring the economic paradigm used in line with the spirit of the times. The new development doctrine should focus the country on the development of large vertically integrated trans- and transnational corporations that are able to invest in domestic modern research and development.

The reasons for the scientific interest in new industrialization were the average rates of economic growth, the low competitiveness of the domestic industry, the low skill level of workers, etc. As it was mentioned in previous study Agumbayeva A. (2018) [1] the issue of new industrialisation was the topic of many researches of such scientists as Reich (1982); Landesmann (1992), U.Bek (1992), Chang (1994), Huck and Konrad (2004), Goh (2005). The paradigm of new industrialization has been actively discussed by leading Russian scientists, among them V. Inozemtsev (2009), A. Aganbegyan (2010), S. Bodrunov (2012), V.Ivanter (2012), S. Glazyev (2013), V. Ryazanov (2017) and others. In Kazakhstan, the problems of new industrialization are considered by scientists R. Alshanov (2016), Ye. Sagindykov (2016), K.Abishev (2016), K.Sagadiev (2017) and etc.

Currently new industrialization has become actualized in the works of many researchers, as an option to modernize the economy. In highly developed economies, the development path has also been recognized as a neo-industrial path, declaring a wrong course towards the development of the financial and service sectors in 2012 by the members of the European Commission Council of Ministers. The complexity and complexity of the phenomenon of new industrialization allows in conceptual terms to determine it through the system

method in a generalized form, with the possible selection of the most important elements of this system. Due to the fact that the concept of new industrialization has relatively recently become the object of scientific research, in the domestic literature the range of different approaches to the definition of this term has been very extensive.

II. LITERATURE REVIEW

Many CIS scientists consider the concept of industrialization from different points of view. Let's consider the opinions of both Russian and domestic scientists. Thus, according to S. Gubanov, industrialization is seen as the creation of a first-class industrial basis for innovation. In his opinion, the neo-industrial economy is a knowledge-based economy, aimed at labor saving, resource recycling and waste-free, replacement of labor-intensive by machine-intensive, transformation of social labor into creative, inventive, scientific and organizational.

A. Martynov (2014) defines neo-industrialization as a result of a highly efficient and high-tech economy complemented by the avant-garde innovative sector, i.e. here, new industrialization is seen not as a tool, but as a result of modernization [2].

V. Kulkov (2015) discloses neoindustrialization as an exit to the level of modern world technological requirements, «the transformation of the now fragmented national economy into a consolidated economy, qualitatively homogeneous with the economy of the advanced industrial countries of the world».[3]

V. Logachev and D. Kochergin (2013) consider neo-industrialization through the prism of state regulation and note that this is a new planned economic system in which direct and indirect methods of regulating the most important proportions of the economy operate.[4]

In the modern historical period, the strategic task of the development of the Russian economy is the search for a new growth model with overcoming the technological gap between the leading countries. In this formulation of the problem, the most complete definition seems to be new industrialization as a model of economic growth, in which its basis is not a raw material complex, but high-tech production, both in new and traditional industries, including the agro-industrial complex, the mining industry and construction.

As noted above, the most developed concept of neo-industrialization is the concept of S.Gubanov (2012), but A. Tatarkin and O. Romanov (2013) also investigated this

process in some detail. In their works, neoindustrialization is a «synchronous process of creating new high-tech sectors of the economy, effectively innovating its traditional sectors with consistent qualitative and consistent changes between technical, economic and socio-institutional spheres through interactive technological, social, environmental, political and management changes». [5]

The most comprehensive, in our opinion, definition of neoindustrialization is given by A. Seleznev (2014), defining it as a high-tech reconstruction of the national economy with a large-scale reconstruction of the entire economic system, including forms of organizing large-scale production, methods of stimulating growth of savings, investment and productivity, reducing costs and improving quality products.[6]

New industrialization through the prism of the mechanism, and not the result, is considered by A.Kozenko (2014). A.Kozenko believes that «new industrialization is a set of long-term technological and social processes linked into a single strategy, ensuring the transition of the Russian economy to a modern, competitive industrial system. In other words, new industrialization is a process that modifies the overall system as a whole, so we can say that it is no less necessary element of the rise of the Russian cultural-historical type, a phenomenon that can give a new and richer meaning to the social life of citizens».[7]

The closest definition of the views of the authors is the definition of O. Drozdov (2011), who notes that “new industrialization should be considered not only as changes in the production basis of society. New industrialization, being a component of industrial policy, must be firmly linked and carried out in close connection with the consistent progressive changes in the political and institutional foundations of society, the individual and public consciousness, and a purposeful and persistent solution to progressive socio-economic and environmental problems.”[8]

Summarizing the definitions of new industrialization presented in the modern economic literature, we will select them from the concept of neo-industrialization within the framework of this study. Neo-industrialization is an economic policy of highly developed countries, aimed at maintaining the competitiveness of the economy based on the return of products from the territory of developing countries to the country. In the special literature, this process was designated by the term “reshoring” with the subsequent distribution of technologies 6 and 7 of technological structures and the creation of a technotronic society. The noted prerequisites of neo-industrialization are confirmed by the example of Great Britain, when a successfully implemented de-industrialization policy led to a decline in the share of industrial production from 40% to almost 10%, “as a result of the global financial crisis of 2008–2009. The UK actually ended up with a sagging real estate market and a severely undermined financial sector, and improving existing business processes, because the industrialization of the new generation involves not only the introduction and expansion of a wide range of new industries, but also the introduction of new technologies into traditional production technologies.” The example of Great Britain gives every reason to believe that “an economy that creates predominantly virtual values is far from efficient and extremely vulnerable.”

New industrialization is understood as structure-education in the system of national reproduction in the form of increasing the proportion of the industrial complex in the process of deep high-tech diversification of basic industries.

As a result, we find that new industrialization is a means of achieving economic growth based on a change in the structure of the economy in the direction of high-tech industries, which can satisfy the elevated needs of the Russian population in a long period of time.

III.METHODS

The aim of the study is theoretical analysis and empirical study of the influence of processes of digitalisation on industrialisation in Kazakhstan.

The subject of the study is the sphere of IKT of Kazakhstan in the way of construction of new industry.

The theoretical and methodological basis for the study was the scientific works of domestic scientists such as (S. Gubanov, A. Matrynov, A. Tatarkin, Alshanov R., K.Sagadiyev, Ye.Sagindykov, K.Abishev) and others.

This paper traces the meaning of digitalisation on the level of development of industrialisation. This investigation explores the ways of thinking of term of “industrialisation” for implementation of digitalisation. This paper describes the conditions of kazakhstani experience in digitalisation processes and illustrate the main barriers for further activities with big data.

There are two primary aims of this study: 1. To investigate variety points of view of scientists on process of industrialisation and define the meaning of “digitalisation”. 2. To distinguish the main obstacles for development of IKT in Kazakhstan.

This paper has been divided into four parts. The first part deals with introduction. The second one is devoted to literature review. The third part of paper is about methodology. In the fourth part we are offer the main results of this research. And the last part of paper has a conclusion.

Data for this study *were retrospectively collected* from statistical agency of Kazakhstan and official information of Ministries and Committees supervising industrilization and digitalisation in country.

IV.RESULTS

In Kazakhstan today special emphasis is placed on digitalization and the introduction of modern technologies. Telecommunication technologies play one of the key roles in the development of the digitalization in Kazakhstan, being essentially an infrastructure basis and a key resource for the implementation of these technologies in the country.

The development of the industry of data centers and mining opens up the possibility of realizing the country's energy surplus, the development of a completely new sphere of the digital economy, a new market for services. We have unique advantages in the form of cheap electricity, climate, energy, there is an investment interest. The developed telecommunication network of Kazakhstan is one of the main advantages of the country in the field of functioning of data centers and the development of industrial mining in the country.

Both researchers and practitioners believe that the key current trends based on the results of scientific and technological progress and defining modern economic dynamics are re-industrialization, new industrialization or “innovative industrialization, neo-industrialization, super-industrialization”. [one]

Digital economy leaves no room for survival to industrial enterprises without modernization as a process of improvement and transformation, aimed at irreversible qualitative changes that meet the basic principle of the theory of systems - the principle of development.

Digital transformation covers all sectors of the economy, the sphere of state, corporate and public administration, society in its broadest sense. It is rightly associated with new industrialization, which focuses on fundamental shifts in technological, energy and institutional bases and infrastructures, in business models, and mass value orientations. [9]

As Plotnikov V. notes, “today often the concept of digitalization is used in conjunction with the use of digital technologies in industry”. [10] This is due to the fact that digital technologies provide industrial production with a number of advantages, among which the following can be highlighted: operational efficiency in production management, which creates a competitive advantage and facilitates profit growth, increases; informational integration of the stages of the life cycle of the products is ensured, allowing you to comprehensively solve the problems of optimizing production and quality, creating new business opportunities, etc.

At the same time, it is important to note that from the standpoint of economic benefits, the digitalization of production is not valuable in itself, but only to the extent that it allows for an increase in the economic efficiency of production.

According to the World Bank, the economy of Kazakhstan over the years of independence, from 1991 to 2015, grew by 7.4 times. And according to the UNDP international agency, Kazakhstan ranks 55th in the world. According to the human development index, the country is ahead of China, Malaysia and Turkey and among the 188 countries is at the 56th position [11;12]. The achievement of these successes contributed to: the transition to economic development based on market principles; decentralization of the national economy management system and carrying out a complex of administrative reforms; granting independence for all subjects of the economy and their further democratization. At the same time, such factors as the creation of national and regional innovation systems with a network of technopolises, technoparks, and technological business incubators have positively influenced. Innovation clusters are now being formed, national development institutions are in operation. According to R. Karenov [13], the outlines of the national model of innovative development of Kazakhstan are formalized in the form of a high-tech model of the economy based on human capital. The priority areas of Kazakhstan are the development of innovative projects and the commercialization of technologies, the large-scale attraction of direct investments into the economy, especially foreign ones. According to the academician K.Sagadiyev [11; 12], over the years of execution of the SPAIID, according to the technological level of production, Kazakhstan has risen from

82nd to 56th place in the world, and in terms of innovation potential - from 101st to 59th place. And on the export potential of Kazakhstan is now ranked 43rd in the world rankings. These indicators indicate a serious progress in the industrial development of the country. Thus, the country is on the right path to innovative prosperity.

This article will provide information on the ICT industry of Kazakhstan, which is one of the main indicators reflecting the current situation in the whole ICT industry. [14]

In 2016, the ICT industry of Kazakhstan did not suffer any significant changes by continuing development across the board. So at the end of 2016 year, the volume of Kazakhstan's ICT industry amounted to 1,651,565 million tenge (Figure 1), which is 3% more than the same period in 2015. With another hand if in monetary terms the industry volume increased, then in relation to the country's GDP share

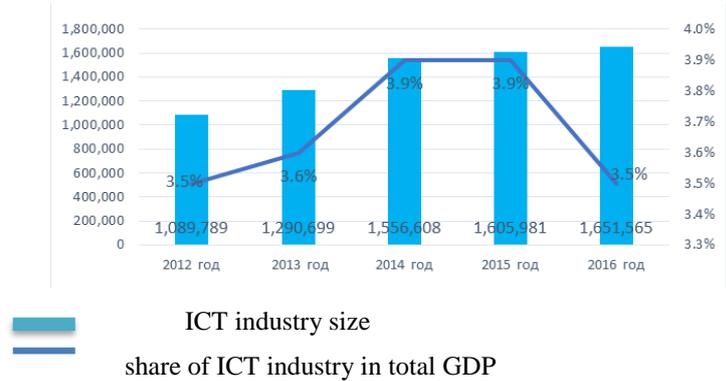


Fig.1. Volume of ICT industry and share in GDP

The ICT industry has shrunk from 3.9% to 3.5%. It's worth it note the country's total GDP in 2016 increased by 15% compared with 2015.

At the same time, the growth rate of the industry plays a significant role. For example, if in 2013 and 2014 the growth rates were 18% and 20%, respectively, in 2016 this figure was 3%. The ICT industry consists of a telecommunications market and the IT market (Figure 2). In terms of volume, the telecommunications market was always larger than the IT market, and the proportion of shares in the ICT industry remained at the same level. However, according to the results of 2016, the proportion started to change towards the IT market, whose share increased from 29% to 34%.

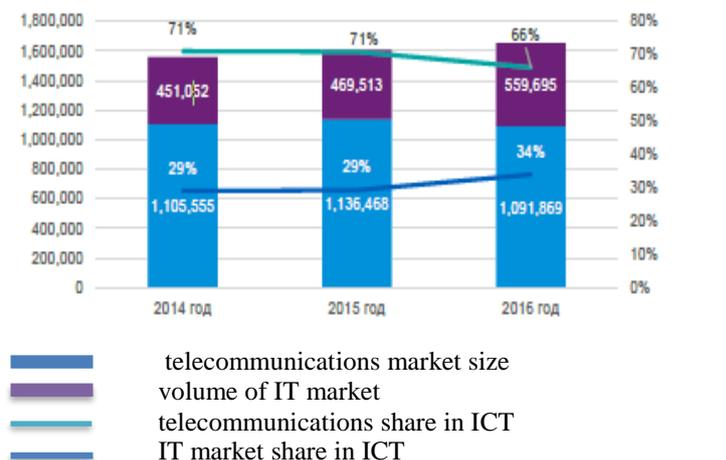


Fig. 2. The volume of the IT market and telecommunications million tenge

In recent years, the IT market in Kazakhstan shows stable growth, and in 2016 the market volume amounted to 559 695 million tenge (Figure 2), which is against the previous year more than 19%. The reason for the increase in is the increase in volume IT equipment from 251 981 million tenge in 2015 to 286,767 million tenge in 2016, an increase in IT services, the volume of which in 2016 amounted to 219 439 million tenge against 176 965 million tenge in the previous year. Also on the IT market there is an increase in the volume of licensed software, the volume of which in 2016 amounted to 53,490 million tenge against 40,567 million tenge in 2015.

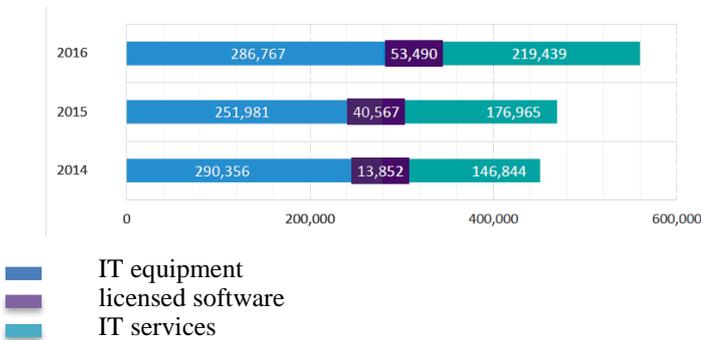


Fig.3. The volume of sectors of the IT market

As for the telecommunications market, in 2016 66% of its volume is occupied by the communications market. The communications market in Kazakhstan continues to progress from year to year, including in the economic and infrastructural terms. The average price for communication services has decreased significantly due to increased competition in the market and received a positive feedback from users of communication services.

The communications market continues to grow in cash terms, showing a positive growth rate of 3% - as a result, by the end of 2016 its volume amounted to 722,217 million tenge (Figure 3).

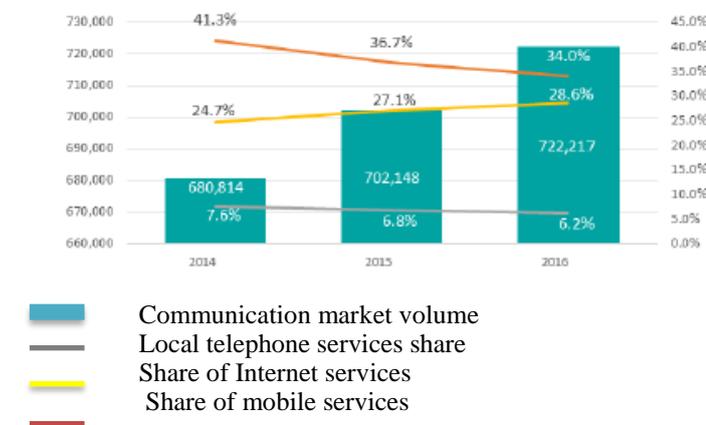


Fig.4. Communications market volume

Meanwhile, in recent years, the structure of the communications market has changed significantly. For example, the share of Internet services continues to increase (from 27.1% to 28.6%), while the share of mobile services (from 36.7% to 34%) and local telephone services (from 6.8% to 6.2%) maintain a downward trend.

Such changes in the market structure are due to the following reasons:

- Most subscribers of mobile operators switched to integrated tariff plans, as a result of which the average subscriber ARPU decreased;
- Due to the increasing penetration of smartphones in the country, more and more people are using the Internet services as a connection;
- Continued declines in local telephone use.

The digital economy is rapidly transforming completely different industries around the world. In a digital economy, economic relations are becoming more complex. The specificity of the transformations is reflected in the fact that the processes of production, distribution, exchange and consumption of information become major compared with other types of economic and economic activity, and also affect them.

V. CONCLUSION

The development of the digital economy is forcing industrial enterprises to modernize their production processes through procedures for improvement and transformation. These procedures are aimed at qualitative changes and respond according to the theory of systems to the principle of development. According to the new system methodology in economic theory the functioning of the economy at any level (from regional level to global level) is considered from the perspective of creation, interaction, transformation and liquidation of economic systems. [15]The development of digitalization and the rapid growth of industrialization is a necessary and ongoing process of adapting the system to the requirements of the external environment. Today such a prioritization is the main condition for the survival of an enterprise in a competitive environment. In this regard, the modernization of the enterprise contributes to the emergence of qualitatively new opportunities to ensure the organizational and economic sustainability of the enterprise as an economic and production system.

References

- [1] A. Agumbayeva. Impact of the new industrialization on innovational development of production in kazakhstan/proceedings of the 2nd international scientific conference on new industrialization: global, national, regional dimension (SICNI 2018). advances in social science, education and humanities research, volume 240., pp. 639-644.
- [2].A. Martynov. New Industrialization: Interaction economic and social policies / / Problems of theory and practice exercise. - 2014. - 2. - pp. 25-34.
- [3] V.Kulkov Post-industrialization or new industrialization? // Problems we lie. economy. - SPb., 2014. —3. - pp.56-59
- [4] V. Logachev. Neo-industrial paradigm against the background of “post-industrial” subject / V. Logachev, D. Kochergin // Economist. - 2011. - 7. - pp.37-44.
- [5] A. Tatarkin New industrialization of the Russian economy / A.I. Tatarkin, O.A. Romanova, N.Yu. Bukhvalov // Vestn. UrFU. Ser.: Economy and Ex. / Ural. feder. un-t - Yekaterinburg, 2014. -3. - pp.13-21
- [6] A. Seleznev Is there an alternative to the paradigm of new industrialization? // The Economist. - 2014. - 8. - pp.19-27
- [7]A. Kozenko . Options for the new industrialization of Russia in the context of the long-wave dynamics of the world economy // Problems sovrem. economy. - SPb., 2013. - 4. - pp. 60-63.
- [8] O. Drozdov On the issue of reference points of new industrialization in Russia // New Industrialization of Russia. Theoretical and managerial

- aspects: Collective monograph / under scientific. ed. Dan. N.F. Gazizullin. - SPb. : NPK "Growth", 2014 - 237 p.
- [9] A. Ageev, "The Future of the Digital Future," in *Economics of the 21st Century*, No. 3–2018.
- [10] Plotnikov Vladimir Aleksandrovich Digitalization of production: theoretical nature and development prospects in the Russian economy // *Izvestiya SPbGEU*. 2018. No. 4 (112). URL: <https://cyberleninka.ru/article/n/tsifrovizatsiya-proizvodstva-teoreticheskaya-suschnost-i-perspektivy-razvitiya-v-rossiyskoy-ekonomike> (appeal date: 03/22/2019).
- [11] K. Sagadiev Great passes of sovereign years / K. Sagadiev // *Kazakhstanskaya Pravda*. - 2016 — 22 Nov. - p. 4.
- [12] F. Alzhanova Science-intensive economics: approaches to research and measurement / F.G. Alzhanova, F.M. Dnishev, D.R. Korgasbekov // *Vestnik of KazNU. Economic series*. - 2016. - № 6 (118). - p. 60–69.
- [13] R. Karenov. Industrialization - one of the key directions of development of Kazakhstan in new economic reality // *Vestnik of KARGU 2017, Karaganda*.
- [14] ICT industry report in Kazakhstan // JSC "National Infocommunication holding "Zerde", 2018
- [15] Yu. Kovalchuk., I. Stepnov Digital Economy: Transformation of Industrial Enterprises // *Innovations in Management*. 2017. - № 11. - p. 32-43.